

Application No. 10/027,906

REMARKS

Claims 2-25, 126-133, 136, 137, 142-145 and 148-186 are pending. By this Amendment, claims 5, 15-18, 126, 142 and 158 are amended, and new claims 185 and 186 are added. The specification is amended to update references to copending applications that have subsequently issued as patent. Claims 15-18 and 158 are amended to correct the antecedent reference. The amendments of claims 5, 126 and 142 are supported by the specification, for example, at page 14, lines 1-12 and page 54, lines 3-13. New claim 185 is supported by the specification, for example, at page 14, lines 1-12 and page 54, lines 3-13. New claim 186 is supported by the specification, for example, at page 55, lines 3-9. No new matter is introduced by the amendments or new claims.

Claims 136, 137 and 173-179 are allowed. Claims 2-25, 126-133, 142-145, 148-171 and 180-184 stand rejected. Applicants respectfully request reconsideration of the rejections based on the following comments.

Rejections Under 35 U.S.C. § 102(e) Over Yoshimura et al.

The Examiner rejected claims 4-7, 9-13, 16, 17, 19-22, 23-25, 148-155, 158, 126-129, 157, 160-163, 130-132, 167, 169, 170, 142, 143, 145, 182 and 183 under 35 U.S.C. § 102(e) over U.S. Patent 6,690,845 to Yoshimura et al. (the Yoshimura patent). Applicants have amended claims 5, 126 and 142 to more particularly point out Applicants' claimed invention. In view of the amendments and the following comments, Applicants assert that the Yoshimura patent does not prima facie anticipate any of the pending claims. Applicants' comments are grouped according to the organization provided by the Examiner. Applicants respectfully request reconsideration of the rejections based on the following comments.

Claims 4-7, 9-13, 16, 17 and 19-22

Claims 4, 6, 7, 9-13, 16, 17 and 19-22 depend from claim 5. As amended, claim 5 recites that "the confined optical pathway within the first layer comprises an inorganic optical

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glass." The Yoshimura does not disclose a structure as claimed with a confined optical pathway comprising an inorganic optical glass. Therefore, the Yoshimura patent does not prima facie anticipate claim 5 or any claims depending from claim 5.

Claims 23-25, 148-155 and 158

Claims 24, 25, 148-155 and 158 depend from claim 23. The Examiner has taken the position that 90 degrees is not a sharp turn with respect to light rays. With all due respect, Applicants believe that the Examiner is neglecting an explicit feature of the claim. Specifically, the concept of a "gradual turn" is missing from the Examiner's analysis. The plain reading of this expression implies that the ultimate turn is not immediately reached. Gradual does not refer to the total degrees of the turn but to the reaching of the ultimate turn gradually rather than immediately. So the claimed optical taper has a continuous change in angle. In contrast, element 155 of the Yoshimura patent reaches a 90 degree turn instantly rather than gradually.

Gradual bends are fundamentally different from abrupt bends beyond the difference in footprint. Gradual bends are accomplished by inducing the optical wavefront to propagate more slowly along the inside and/or more quickly along the outside of the bend, causing the path of light to bend as it propagates. Abrupt bends induce a single Fresnel or Bragg reflection off a single reflective surface or grating providing a singular fold in the optical wavefront.

Since the Yoshimura patent does not disclose an optical taper with a gradual turn, the Yoshimura patent does not prima facie anticipate claim 23 or any claims depending from claim 23.

Claims 126-129, 157 and 160-163

Claims 127-129, 157 and 160-163 depend from claim 126. Claim 126 has been amended to recite the core comprises an inorganic optical glass. Since the Yoshimura patent

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does not disclose the claimed structure with a core comprising an inorganic optical glass, the Yoshimura patent does not prima facie anticipate claims 126-129, 157 or 160-163.

Claims 130-132, 167, 169 and 170

These claims recite emissions from the VCSEL that are "perpendicular to the plane of the waveguide." In contrast, the structures in Figs. 7-10 of the Yoshimura patent are configured to direct light along the waveguide, not perpendicular to the waveguide. Therefore, the Yoshimura patent does not teach the claimed integrated optical circuit. Applicants maintain that the Yoshimura patent does not prima facie anticipate claims 130-132, 167, 169 and 170.

Claims 142, 143, 145, 182 and 183

Claims 143, 145, 182 and 183 depend from claim 142. Claim 142 has been amended to recite "the first optical device comprising an inorganic optical glass." The Yoshimura patent does not disclose the claimed structure with a first optical device comprising an inorganic optical glass. Therefore, the Yoshimura patent does not prima facie anticipate current claim 142 or any claimed depending from claim 142.

Summary

In view of the above comments, the Yoshimura patent does not prima facie anticipate any aspects of Applicants' claimed invention. Applicants respectfully request withdrawal of the rejection of claims 4-7, 9-13, 16, 17, 19-22, 23-25, 148-155, 158, 126-129, 157, 160-163, 130-132, 167, 169, 170, 142, 143, 145, 182 and 183 under 35 U.S.C. § 102(e) over the Yoshimura patent. Applicants do not presently comment further on specific features of the dependent claims, although Applicants do not acquiesce in the assertions of the Examiner, since these issues are currently moot in view of the above comments.

Rejections Over Yoshimura et al. and Akwani et al.

The Examiner rejected claims 2, 3, 8, 168, 171, 180, 181 and 184 under 35 U.S.C. § 103(a) as being unpatentable over the Yoshimura patent in view of U.S. Patent 6,768,856 to

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Akwani et al. (the Akwani patent). The Examiner cited the Akwani patent for teaching doped silicon oxide glass for forming waveguides in layered optical devices. With all due respect, Applicants maintain that the Examiner has fallen short in several respects with respect to establishing prima facie obviousness. In particular, there is insufficient motivation to combine the teachings and there is no reasonable expectation of success. Applicants respectfully request reconsideration of the rejection in view of the following detailed comments.

The Yoshimura patent only teaches organic polymers in combinations of various chips, other localized structures and the like for forming their devices. The Yoshimura patent does not motivated the formation of waveguides and the like with inorganic glasses. The Examiner indicates that the Akwani patent teaches layered optical structures formed with doped silicon oxide glasses. However, the structures in the Akwani patent are much simpler than the structures disclosed in the Yoshimura patent. Due to the large discrepancy in the nature of the structures in the two patents, there simply is no motivation to combine the disclosures as suggested by the Examiner.

As noted in MPEP 2143.02, the cited references must provide a reasonable expectation of success. The Yoshimura patent focuses on processing suitable for organic polymers. There is no hint in the references how to modify the processing approaches in the Yoshimura patent for corresponding processing for inorganic glasses. The Akwani patent does not teach suitable processing approaches for forming the complex structures in the Yoshimura patent. Therefore, the combined teachings of the references clearly do not provide a reasonable expectation of success.

Since there is no motivation to combine the teachings as suggested by the Examiner and since there is no reasonable expectation of success even if the references are combined, the combined teachings of the Yoshimura patent and the Akwani patent do not render Applicants' claimed invention prima facie obvious. Therefore, Applicants respectfully request

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withdrawal of the rejection of claims 2, 3, 8, 168, 171, 180, 181 and 184 under 35 U.S.C. § 103(a) as being unpatentable over the Yoshimura patent in view of the Akwani patent.

Rejections Under 35 U.S.C. § 103 (a) Over Yoshimura

The Examiner rejected claims 14, 15, 133 and 145 under 35 U.S.C. § 103(a) over the Yoshimura patent. In particular the Examiner indicated that a "fluid, glass or photonic crystal fall into the category of organic or electro-optic polymers." The basis for the Examiner's statements are unclear. While Applicants do not acquiesce in these statements, the deficiencies of the Yoshimura patent with respect to present independent claims 5, 130 and 142 have been described above. Due to the deficiencies of the Yoshimura patent with respect to the independent claims, the Yoshimura patent does not render dependent claims 14, 15, 133 and 145 prima facie obvious. Applicants respectfully request withdrawal of the rejection of claims 14, 15, 133 and 145 under 35 U.S.C. § 103(a) over the Yoshimura patent.

Rejection Over Yoshimura et al. and Yamamoto et al.

The Examiner rejected claim 18 under 35 U.S.C. § 103(a) as being unpatentable over the Yoshimura patent in view of U.S. Patent 6,790,502 to Yamamoto et al. (the Yamamoto patent). The Examiner cited the Yamamoto patent for teaching thermo-optical materials for a fast change in index-of-refraction. With all due respect, it is not clear what structure in the Yoshimura patent is being combined with the teachings of the Yamamoto patent. Nevertheless, the teachings of the Yamamoto patent do not make up for the deficiencies of the Yoshimura patent described in detail above. For example, the combined teachings of the Yoshimura patent and the Yamamoto patent do not provide a reasonable expectation of success in the practice of Applicants' claimed invention. Since the combined teachings of the Yoshimura patent and the Yamamoto patent do not render Applicants' claimed invention prima facie obvious, Applicants respectfully request withdrawal of the rejection of claim 18 under 35 U.S.C. § 103(a) as being unpatentable over the Yoshimura patent in view of the Yamamoto patent.

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Rejection of Claims 156 and 164

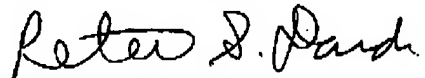
The Examiner rejected claims 156 and 164 under 35 U.S.C. § 103(a) as being unpatentable over the Yoshimura patent. In particular, the Examiner indicated that the vertical light couple guides light and that a person of ordinary skill in the art would recognize that the surrounding materials would have to have a low enough index-of-refraction to prevent leakage of light. Applicants maintain that the Yoshimura patent clearly does not teach the specific index-of-refraction variation specified in the claim. Furthermore, the deficiencies of the Yoshimura patent with respect to corresponding independent claims 23 and 126 are described in detail above. Therefore, the Yoshimura patent clearly does not render claims 156 and 164 prima facie obvious. Applicants respectfully request withdrawal of the rejection of claims 156 and 164 under 35 U.S.C. § 103(a) as being unpatentable over the Yoshimura patent.

## CONCLUSION

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,



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